

## GAS CLEANSING AND CHAIN OF EVACUATION

by

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My discussion this morning logically fits in between what Mr. Cary has already told you and what Lieutenant Commander Abt is going to show you, upstairs during the next hour. Owing to the fact that we were late in beginning this portion of the program I am going to abbreviate my comments somewhat. This will allow time for questions at the end of the discussion.

I would like first of all to point out that the problem related to the gas cleansing station is still in the experimental stage. I doubt if anyone really knows the answers to the many questions concerning construction, distribution, and operation of these establishments. The problem is being considered at the present time and I think it is safe for us to promise that well considered recommendations will be forthcoming in the near future. For the present it seems best to look at the problem as being one of gas cleansing, to be accomplished in improvised structures that will require a minimum of essential materials. I am afraid that in the past there has been too much thought given to the kind of a building that should be erected, rather than to the problem of getting ready to do a job of cleansing of injured people.

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I would like also to call your attention to the fact that the newly revised edition of the manual "First Aid in the Prevention and Treatment of Chemical Casualties" contains a diagram of a more suitable type of cleansing station than the one you will find in the pamphlets previously published and now in your possession. In these booklets the original British recommendations were followed. The British have found it necessary, however, to modify some of their original ideas.

Originally in Great Britain, decontamination stations so-called, were set up and distributed chiefly on the basis of population requirements. At first it seemed to some persons in this country that similar provisions should be made for cleansing stations to serve all persons. When one considers the great rapidity with which the vesicant agents act, however, it is quite obvious that a tremendous number of cleansing establishments would be needed in our cities if they are going to be of very much service to the civilian population. This fact, coupled with the awareness that the materials needed for station construction are exceedingly scarce, has led to a change in policy. It is now believed that our civilian population should be fully trained in first aid and self aid measures and in avoiding exposure to chemical agents of

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warfare. If this educational policy is fully carried out it should minimize the need for fixed cleansing stations to serve gassed but otherwise uninjured persons. So, for the present at least, as Mr. Cary has told you, it is recommended that cleansing stations are to be placed at or near hospitals and casualty stations.

It is quite obvious that there are two types of personnel that must be supplied with cleansing facilities. As Mr. Cary has explained, there are, in addition to the injured and contaminated, certain people working in the protective organizations that will undoubtedly become contaminated. The clothing of these persons will have to be salvaged. It is recommended, that insofar as possible, the hospital cleansing stations will be used for this purpose after the injured and gassed have been cared for. It may be necessary, however, to improvise cleansing facilities, at school houses, in police stations, and fire departments, where certain protective services like the police and firemen can go to be cleansed. In the ordinary community the air raid wardens, in conjunction with the local gas officers, should pick out certain places or certain homes that are best suited for emergency cleansing so that if an air raid warden or other persons in his precinct become contaminated, he will not have to travel nine or ten blocks to the casualty station to have the vesicant agent removed. In such a case, the contaminated person will go directly to his own sector station (somebody's home), remove his clothing outside the house and then be admitted to the basement or into the shower room for rapid and effective cleansing.

The matter of defense plants should be mentioned. In the Office of Civilian Defense, one of the officers, Dr. Mould, is devoting most of his time and thought to the subject of plant protection, including cleansing facilities. This is a special problem that cannot be dealt with at this time.

Captain Fritz in talking about protective clothing earlier this morning pointed to this model as an example of a fully protected person. The suit in which the model is dressed is intended to be one that has been improvised. It is not a regular issue type of clothing but it is a type of clothing that may be made and used in a local community organization. The type of clothing here on the other mannikin is the impermeable type, the only type that the O.C.D. expects to be obtainable for civilian use, at least in the near future. This type of clothing on the table is the permeable or treated type of clothing. It is used by the Chemical Warfare Service but in all probability will not be available for civilian use since the chemicals necessary for its manufacture are not available in the necessary quantity.

To summarize: In event of an attack, our population would fall into three main categories: (1) the average civilian who should



be instructed in ways of avoiding exposure. If he becomes contaminated he will have been trained to take care of himself; (2) our Citizens Defense Corps people and the established protective personnel in our municipalities (police and firemen) for whom some special arrangements should be made. Certain improvised cleansing facilities should be arranged for these people; (3) the injured and gassed. This is perhaps the most important group of all.

We must bear in mind that injured persons may be gassed with one or two classes of gases or with mixtures of both types. If they are gassed with the so-called lung irritant gases, the problem is much simpler from the point of view of emergency medical service because there will be no need for cleansing prior to treatment. More important for your consideration will be the injured persons who are contaminated with vesicant agents. A person with a fractured pelvis, for example, who has been splashed with liquid mustard becomes a real problem in medical management. This person is not only a chemical casualty himself but he is a potential hazard to everybody with whom he comes in contact. In order to handle him without endangering our medical personnel, including doctors, nurses and orderlies, or, as a matter of fact, without endangering all the other patients in the hospital, this casualty must be cleansed by properly trained persons fully protected against injury from the vesicant agents. It is necessary, therefore, that cleansing stations be planned and if possible established for hospitals that are to receive injured persons in case of an attack.

As I previously mentioned, these stations may be used after an attack is over for the cleansing of persons belonging to the Citizens Defense Corps, who have become contaminated. Still later they may be used for the cleansing of the dead who have vesicant agents on their clothes or bodies.

I should like to digress for a moment at this point in order to mention the responsibilities of the various gas officers in a local community. Each community should have a trained gas officer in addition to the physician who has been trained in gas defense. It will be the responsibility of these persons to establish the necessary cleansing stations and to initiate the necessary local training programs for the persons who will operate such stations. A considerable number of persons will be required to operate a cleansing station. Some one will be needed to direct traffic outside of the station, perhaps a member of the emergency police or even a regular policeman. It would be desirable to have a medically trained person outside the station to supervise the unloading of ambulances and to aid in the sorting of casualties. In case of a large and devastating incident, there would be many injured persons. Some would be more seriously injured than others and these should, if possible, have immediate medical attention. We believe



that there should be two stretcher bearers, fully protected, whose sole duty is the unloading and transfer of patients to the undressing room. The training of these persons should be comparatively simple since they need to be trained only in the proper handling of stretcher cases and in the wearing of protective clothing.

A considerable number of persons will be needed inside the station. If it is a station designed for six stretcher cases, as Mr. Cary has described, it will probably be necessary to assign two persons to each stretcher rack. All of these people will need complete protective clothing, including gas masks. They must be trained to undress their patients rapidly, cutting away certain parts of the clothing as needed. They should also be taught to remove any excess liquid vesicant agent remaining upon the skin. Cloth or blotting material so used is deposited in tightly covered metal containers. Attendants in the undressing room must also be trained in the immediate first aid treatment of vesicant burns.

The matter of shifting persons from a contaminated stretcher onto a clean one should be thought of. Heavily contaminated stretchers should be removed from the undressing room as soon as possible. Patients on clean or relatively clean stretchers are next carried through the gas lock to the cleansing room. This can probably be done best by two stretcher bearers who pass back and forth from the cleansing room to the undressing room. These attendants would be stationed in the cleansing room a good part of the time. They would pass through the gas lock and transport each suitably prepared patient back through the lock and into the cleansing room where they would be placed on stretcher racks to receive their baths. Thus each station of this capacity would require 12 fully protected undressers. In addition, four stretcher bearers, a medical officer and perhaps a policeman would be needed to operate this much of the establishment.

After the casualty has been transported to the cleansing room the personnel of this room undertake the process of bathing him and irrigating his eyes. At the present time we believe that attendants in this room should wear respirators or gas masks. They will also need a certain amount of protective clothing. Rubber gloves or perhaps impregnated gloves with rubber gloves over them, oil-skin or rubberized aprons, and rubber boots or overshoes will probably be necessary. There will doubtless be some gas vapors in the cleansing room that should be guarded against. It is the duty of the attendants in the cleansing room to completely cleanse each patient placed before them. If the patient is brought in, his eyes will probably have been injured. On the other hand, if the patient arrives wearing a properly fitted mask, his eyes will have been protected. In any case, prompt irrigation of the eyes should be carried out as soon as the casualty arrives in the



cleansing room. This can be accomplished best by two persons working together. Nurses aides might be assigned to the task of irrigating the eyes. After cleansing has been completed, the patients are loaded on hospital carts or stretchers, and they are then ready to be taken into the hospital.

Insofar as I know, the next point in my discussion has not been referred to in any of the booklets. It would seem sensible to try and separate completely the cleansing room and all its personnel from the hospital or the dressing room. Perhaps a mechanical barrier such as a cement curbing in the floor should be set up. The reason for this precaution is that the persons working in the cleansing room will sooner or later contaminate the dressing room or hospital floor if they pass back and forth from one room to the other. It would, therefore, seem advisable to plan to have the cleansed casualty lifted onto a hospital cart by hospital orderlies so that the floor of the dressing room or of the hospital itself could be kept free of the vesicant agent.

When the patient reaches the dressing room he should be seen by a physician and nurse and appropriate emergency therapy should be instituted. This is about the first opportunity for effective medical treatment.

I had planned to talk to you briefly about first aid and self aid for the gassed but uninjured person. However, I will skip this subject for the moment and, if time permits, I will come back to it at the end of the hour. In case I don't have time to consider this important subject, I should like to have you pay careful attention to Operations Letter No. 46. Furthermore, I would recommend that you emphasize first aid and self aid in any subsequent courses you may give.

In an attempt to tie this morning's exercises together, I would like to trace out what might be the chain of events from the time the alarm was sounded until the casualties began to arrive at a hospital cleansing station.

After an air raid alarm sounds, every person who has no assigned responsibility moves off the street and goes into an air raid shelter or, if he is near his home, he goes to his own home. They go to the rooms that were previously selected and considered to be the safest place in the building.

Some of the windows in private homes might be opened a little with the hope of preventing the shattering of glass when explosions occur. The air raid wardens will, of course, go out to their posts on the street.

The air raid warden will have been trained to be on the alert for a gas attack. He will listen for the type of bombs which might



indicate a gas attack. He will be on the alert for odors of gas. If he suspects that gas has been used in his area, he will sound his gas alarm. We issued to you, I think, another Operations Letter (No. 49) in which several types of gas alarms were suggested. It has since been decided that the wooden rattle will serve as the instrument to sound the gas alarm. I don't know whether it will be possible to hear this signal. It is possible that at times the noise might be so great as to obscure any single audible warning. In this event some other means will be used by the warden to warn that gas has been used and all persons inside of shelters and houses will follow the recommended procedures of escaping from the fumes and making their shelters gas tight.

In any case, the air raid warden will call the control center, notifying the senior gas officer that he suspects that gas has been spread in his sector. The senior gas officer has the suspected area marked on the map and he dispatches his gas reconnaissance agent--one or more as the case may indicate--to the suspected area. The reconnaissance agents have detector devices and are trained in their use. (We have a few examples of detectors here and perhaps Mr. Cary will say something about them later.) The reconnaissance agent goes to the area in question and determines whether or not gas has been laid down and, if possible, the type of gas.

In the meantime the senior gas officer uses his judgment in allowing or not allowing services to go through this sector. The emergency medical service representative at the control table notifies the hospitals and cleansing stations to be ready to receive chemical casualties and as soon as he learns the type of gas that has been used, he informs the attendants at the cleansing stations of the type of casualty they should be prepared to treat.

Now from the control center the emergency medical chief dispatches certain fully trained and properly protected personnel. Certain ambulances that have been assigned to this work are sent out with their complement of fully equipped and trained persons. In this way it should be possible to handle the injured and gassed casualties.

There are many other things that are going to need attention. Some of these assignments are not entirely in the province of the emergency medical service, but medical advice may be needed. What will be done with persons stranded in this contaminated area? It may be necessary to clean up a small passageway in order to evacuate these persons that have been staying upstairs in their own dwellings. The streets and buildings will have to be decontaminated in the manner shown in the movies last night. These responsibilities, for the most part, belong to the senior gas officer and his reconnaissance agents. They must decide upon the best and most expedient method of handling the local situation and give the necessary advice



to the protective agencies that will undertake the task of cleaning up the area.

My time is nearly used up. However, before closing I should like to mention a few matters on self aid and first aid in which the teachings in this course have varied from the recommendations published in the pamphlets that were issued to you. The temperature of the water for bathing was mentioned and cold soap and water sponging was stated to be superior to soap and hot water baths in preventing burns from vesicant agents. Taking everything into account, such as the superior cleansing of hot water, the relative comfort to the patient, etc., perhaps we should recommend the use of warm water. The use of "solvents", gasoline and kerosene, is not recommended in the O.C.D. publications. Dr. McLean has, however, included them as useful substances for the removal of vesicant agents. If such solvents are to be used, extreme care must be exercised to prevent the spreading of the vesicant over a larger area of skin.

All speakers have emphasized, as I am sure you have noted, the need of prompt first aid and self aid measures if such treatment is to be at all effective. For this reason it is believed that the procedures for first aid should be as simple as possible and that the number of remedies recommended should be limited to a very few that can be found and applied quickly. Once again I should like to recommend that you make the maximum use of Operations Letter No. 46 in your subsequent teaching.



